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Attachment A-1

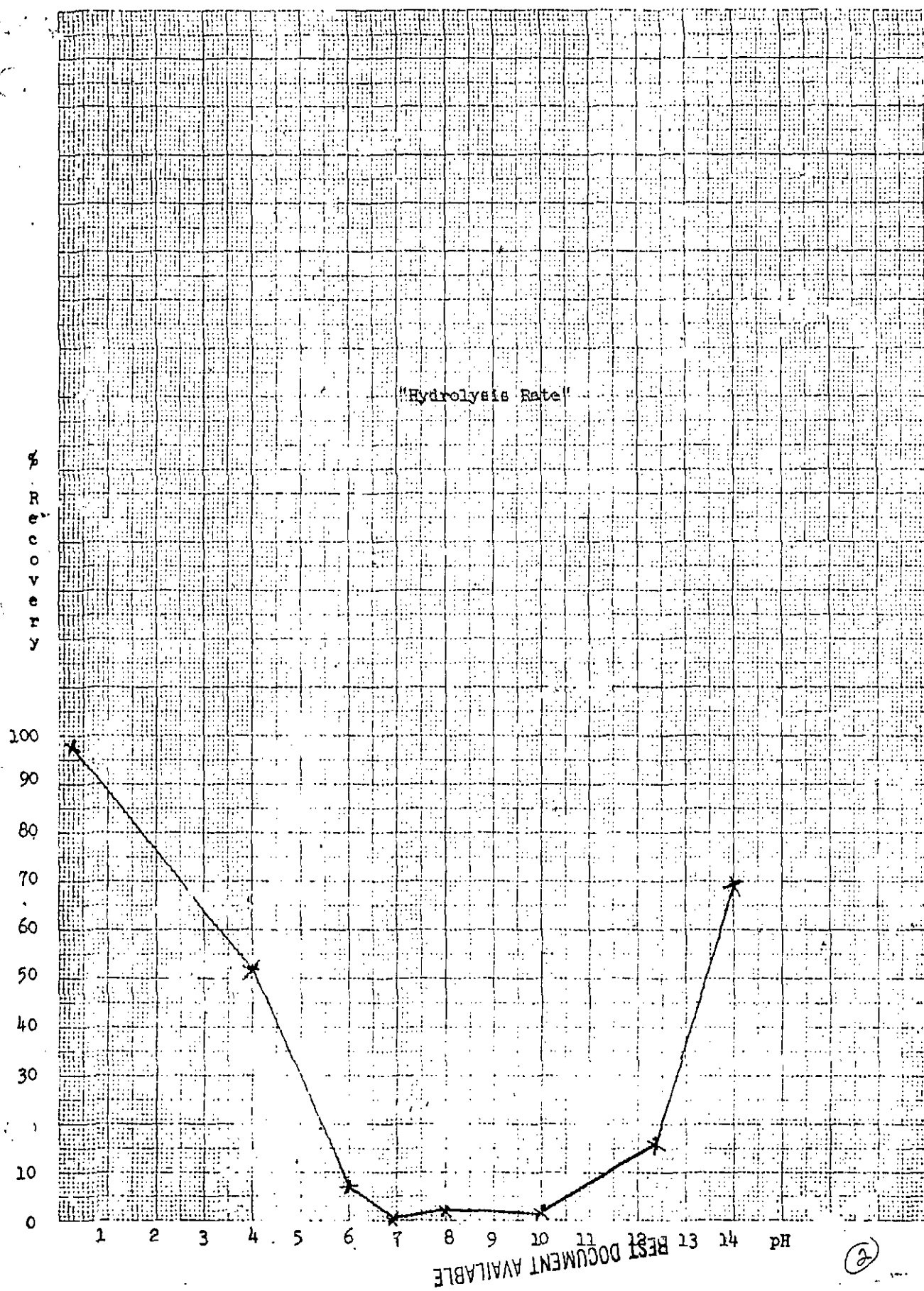
Denver Wildlife Research Center, U.S. Department of Interior
August 1969

Rate of Hydrolysis of Zinc Phosphide

1. Eight analyses were run, using solutions ranging in pH from about 0.2 through about 14.
2. In each analysis, 100 ml. of water (adjusted to a given pH with buffers, acid, or base) was added to a reaction flask containing known amounts of Zn_3P_2 . The flask was maintained at 50°C. and a continuous N_2 sweep was maintained for 1 hour.
3. All analyses were run by the method set forth in the Federal Specification for Zn_3P_2 except for substituting various buffered pH solutions for the sulfuric acid.
4. Results were as follows (also see graph titled "Hydrolysis Rate"):

<u>Solution used</u>	<u>pH</u>	<u>% Recovery</u>
1. 10.0% v/v sulfuric acid in H_2O ca.	0.2	97.59
2. Coleman Buffer, certified	4.0	51.73
3. " " "	6.0	5.98
4. Boiled, distilled H_2O	7.0*	0.00
5. Coleman Buffer, certified	8.0	1.24
6. " " "	10.0	1.12
7. Lime suspension (sat. solution)	12.4 (Handbook value)	16.40
8. 10% w/v NaOH solution	ca. 14	70.02

* At a pH of 7 (distilled H_2O only) no reduction of the potassium permanganate could be observed; therefore, in this case the reaction time was extended to 2 hours.



2.

Comments by W. H. Robison, Chemist

Conclusions reached during this investigation:

1. There are several factors governing the recovery of PH_3 generated by hydrolysis of Zn_3P_2 in the presence of sample material. These include:
 - A. pH of reaction flask contents.
 - B. Oxidation of PH_3 to non-volatile components -- probably phosphates.
 - C. Irreversible adsorption of PH_3 or its equivalent as phosphorus-containing compounds by the sample material.
2. The method will detect PH_3 at the 0.005 ppm level and give reliable quantitative results at the 0.05 ppm level or above.

BEST DOCUMENT AVAILABLE

(3)

A. Jackson. Raven 16-57-82

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DATA EVALUATION RECORD

A. Jackson Bowen 10-27-82

TDMS0030

DATA EVALUATION RECORD

PAGE 1 OF

CASE GS0026

ZINC PHOSPHIDE

PM 400 01/28/80

CHEM 088601

Zinc phosphide

BRANCH EFB DISC 30 TOPIC 051015

FORMULATION 00 - ACTIVE INGREDIENT

FICHE/MASTER ID 00005926

CONTENT CAT 02

U.S. Fish and Wildlife Service, Denver Wildlife Research Center
(1969) Rate of Hydrolysis of Zinc phosphide. (Unpublished study
including comments by R.H. Robinson, received Sep 25, 1969 under
OF0490; submitted by Hawaii, Dept. of Agriculture, Honolulu,
Hawaii; CDL:093187-K)

SURST, CLASS # 5.

DIRECT RVN TIME # 0.25 (MM) START-DATE 2/23/82 END-DATE 2/23/82

REVIEWED BY:

TITLE:

ORG:

LOC/TEL:

see attached sheet

SIGNATURE:

Edward B. Batten

DATE: 2/23/82

APPROVED BY:

TITLE:

ORG:

LOC/TEL:

SIGNATURE:

DATE:

CONCLUSIONS

This submission with data showing that
aqueous solutions of zinc phosphide are
stable only at pH 7.0 is pertinent
to the registration standard, since
the product chemistry guidelines require
data on aqueous stability of each
~~pesticide~~ pesticide chemical.

O. Jackson Rain 11-27-82

DATA EVALUATION RECORD

A. Jackson Raven 10-27-82

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DATA EVALUATION RECORD

PAGE 1 OF

CASE GS0026

ZINC PHOSPHIDE

PM 400 01/28/80

CHEM 086601

Zinc phosphide

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SUBST. CLASS = S.

DIRECT RXN TIME = 0.25 (min) START-DATE 2/23/82 END DATE 2/23/82

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TITLE:

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LOC/TEL:

see attached sheet

SIGNATURE:

Edward B. Brutter

DATE: 2/23/82

APPROVED BY:

TITLE:

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LOC/TEL:

SIGNATURE:

DATE:

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